SECTION 1.0

Executive Summary

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1.1 Project Overview

This Executive Summary comprises the following sections. Section 1.1 is a project overview of the proposed Central Valley Energy Center (CVEC). Section 1.2 provides a general project schedule, and Section 1.3 provides project ownership details. The project alternatives are discussed in Section 1.4. Environmental considerations are discussed in Section 1.5. Key benefits of the project are presented in Section 1.6, and the list of persons who prepared this Application for Certification (AFC) is referenced in Section 1.7. The relevant laws ordinances, regulations, and standards (LORs) are referenced in Section 1.8 and permitting requirements are referenced in Section 1.9.

Central Valley Energy Center LLC (CVEC LLC or Applicant) proposes to develop a natural-gas-fired generating facility south of the City of San Joaquin (see Figure 1.1-1, figures are located at the end of the section) in Fresno County, California. The proposed CVEC will be a high-efficiency, combined-cycle facility that will sell electricity in the deregulated market.

CVEC will be a "merchant plant," which will sell its output into the power market under short-, mid-, and long-term contracts. As a result, the project will provide California electric customers with a highly competitive source of clean energy, with all project economic risks being borne by the owners.

CVEC will consist of the following components:

- A 1,060-megawatt (MW) net, natural-gas-fired, combined-cycle generating facility consisting of three modern combustion turbines and one condensing steam turbine.
- A 230-kilovolt (kV) switchyard
- Approximately 1,500 feet of new 230-kV transmission line
- Rerouting approximately 2,900 feet of 70-kV subtransmission line
- Approximately 20 miles of new 24-inch diameter natural gas pipeline
- Approximately 21 miles of 27-inch diameter pipeline for reclaimed water supply
- Approximately 1.0-mile-long pipeline for domestic water supply to the plant
- Approximately 2.5-mile long sanitary sewer line

CVEC LLC currently has a purchase option on an 85-acre parcel of agricultural land. The parcel is located in Section 25, Township 15 South, Range 16 East Mount Diablo Base and Meridian (San Joaquin 7.5-minute Quadrangle). The assessor's parcel number (APN) for the site is: 033-020-31. The plant site would occupy approximately 25 acres near the southeast corner of the triangular parcel, with the remainder available for lease as agricultural land (see Figures 1.1-2 and 1.1-3). Figure 1.1-1 shows the proposed routes for the gas and reclaimed water lines. Figure 1.1-2 shows the project site, utility extensions, and reroutes associated with the project.

A schematic arrangement of the plant is presented as Figure 1.1-3. A full-page photograph of the site prior to construction is presented as Figure 1.1-4. An artist rendering of the site and transmission/subtransmission lines after construction is presented as Figure 1.1-5.

The Applicant's approach to identifying potential project sites is based on the desirability of sites that have low potential for environmental impacts, while allowing for access to electrical markets that serve areas with high and/or increasing electrical demand. The proposed project site is consistent with this philosophy because it is located on the southern edge of the City of San Joaquin, in a rural, sparsely populated portion of Fresno County adjacent to Pacific Gas & Electric's (PG&E's) Helm substation, allowing service to customers in the Central Valley.

Major landmarks near the project include the Mendota Wildlife Management Area, approximately 10 miles to the northwest, and the Fresno-Clovis Wastewater Treatment Facility (WWTF), approximately 20 miles to the northeast. The site is zoned for manufacturing, and thermal power plants are a compatible use.

The CVEC would connect to the electrical transmission system by looping into PG&E's Panoche–McCall and Panoche-Kearney 230-kV transmission lines.

Natural gas for the facility will be delivered via approximately 20 miles of new 24-inch pipeline that will connect to PG&E's existing Line 2 located west of the project site at the intersection of Manning with a connection to PG&E Line 401, for backup purposes (Figure 1.1-1). The pipeline would be constructed by open trench along existing major roads through the edge of agricultural fields of cotton, melons and tomatoes. Major waterways and flood channels would be crossed by horizontal directional drilling (HDD) to minimize potential adverse environmental impacts.

The cooling water supply for the project would be reclaimed water drawn from a mound under the settling basins of the Fresno-Clovis WWTF approximately 20 miles northeast of the project site. Six new extraction wells would provide a maximum production rate of 7,000 gpm required by CVEC. The reclaimed water will be transported to CVEC via approximately 21 miles of 27-inch pipeline. The City of San Joaquin would provide domestic water for drinking, showers, sinks and general sanitary purposes its municipal system. The water supply needed for domestic water to CVEC is estimated at less than 3 acre-feet per year (afy).

The generating facility will consist of three combustion turbine generators (CTGs) equipped with dry, low oxides of nitrogen (NO_x) combustors and steam injection power augmentation capability; three heat recovery steam generators (HRSG) with duct burners; one condensing steam turbine generator (STG); a deaerating surface condenser; a mechanical-draft cooling tower; and associated support equipment providing a net generating capacity of 1,060 MW. The combustion turbines are expected to be Siemens-Westinghouse 501FD units. One nominal 125,000-pound-per-hour auxiliary boiler will also be included to provide steam as needed for auxiliary purposes. A 16-cell mechanical-draft evaporative cooling tower will be installed to provide cooling water for the steam turbine surface condenser and other cooling loads. Additional auxiliary equipment will include a 1,040-kW natural-gas-fired emergency generator and a 370-horsepower (hp) diesel fire pump.

The legal description of the project site parcel is provided in Appendix 1A. Parcel numbers and the names of the landowners within 1,000 feet of the site and within 500 feet of electric transmission line, waterlines, and natural gasline corridors are included in Appendix 1B.

1.2 Project Schedule

Construction is planned to begin in the third quarter 2002 and be completed by the third quarter 2004. Plant testing will commence in the second quarter 2004, and full-scale commercial operation is expected to commence in third quarter 2004.

1.3 Project Ownership

The CVEC will be owned by the Central Valley Energy Center, LLC, a wholly-owned subsidiary of Calpine Corporation.

1.3.1 Summary of Calpine Corporation

Calpine is an independent power developer, owner, and operator headquartered in San Jose, California. As of March 2001, Calpine owns an interest in 50 power generation facilities and geothermal steamfields having an aggregate capacity in excess of 5,874 MW. Calpine currently owns and operates facilities in the state of California with a combined output of 2,400 MW. Calpine has announced the development of 3,300 MW of additional California generating capacity and has a goal of 12,000 MW total by 2005.

1.3.2 Other Agreements

CVEC LLC will contract with PG&E for natural gas transmission to its point of interconnection with PG&E's main gas lines. CVEC LLC will own the gas lines from the plant to the point of interconnection. CVEC LLC will contract with various suppliers for fuel. PG&E will own and operate the transmission lines. CVEC LLC will contract with the City of Fresno for reclaimed water supply. The City of San Joaquin will provide domestic water supply and sanitary sewer service.

The legal relationship between CVEC LLC, the owner of CVEC, PG&E, and other suppliers will be contractual only (one of supplier/user or seller/buyer of services or products).

1.4 Project Alternatives

A "No Project" Alternative was considered and rejected as inconsistent with California's program to develop merchant power generation facilities, the objective of which is to increase reliability and stabilize prices by increasing electric supplies. In addition, the "No Project" Alternative could result in greater fuel consumption and air pollution in the state because generation from older, less efficient plants with higher air emissions would not be reduced by generation from cleaner, more efficient plants, such as CVEC. Other possible alternative sites in the general vicinity of the proposed site were reviewed and found to be less acceptable than the site described in Section 1.1. Alternative routes for the natural gas line, electric transmission line, and reclaimed waterline were also reviewed and found to be less acceptable than the proposed routes.

Several alternative generating technologies were reviewed in a process that led to the selection of a modern, proven, combustion turbine combined-cycle arrangement for CVEC using natural gas for fuel. The alternative technologies included conventional oil and natural-gas-fired plants, simple-cycle combustion turbines, biomass-fired plants, waste-to-energy plants, solar plants, wind generation plants, and others. None of these technologies were considered equal to or better than the combined-cycle technology selected for CVEC. A complete discussion of project alternatives is presented in Section 9.0. Electric transmission connection alternatives, natural gas pipeline alternatives, and reclaimed waterline alternatives are presented in Sections 5.0, 6.0, and 7.0, respectively.

1.5 Environmental Considerations

Sixteen areas of possible environmental impact from the proposed project were investigated. Detailed descriptions and analyses of these areas are presented in Sections 8.1 through 8.16 of this AFC.

Without the implementation of mitigation measures, several of these areas could have environmental effects. The possible effects of key areas are summarized briefly in this section.

1.5.1 Air Quality

The site is located in an area designated as nonattainment for state and federal ozone air quality standards, and for state fine particulate matter (PM_{10}) standards. An assessment of the impact to air quality was performed using detailed air dispersion modeling. The air impacts from the project will be mitigated by the advanced nature of the combustion turbine emission control technology. Emission reduction credits (ERCs) will be obtained to offset increases in emissions of volatile organic compounds (VOCs) and NO_x (both precursors of ozone), and of PM_{10}. The combination of the detailed air quality modeling analyses, and the above mitigation measures will result in the project having no significant adverse impact on air quality. See Section 8.1 for a detailed analysis of air quality.

1.5.2 Water Resources

Consistent with State Water Resources Control Board Policy 75-58, which discourages the use of potable surface water where practical alternatives exist, the project would use reclaimed wastewater for cooling. Use of reclaimed wastewater conserves higher quality surface water for potable and other critical uses. An ancillary benefit of this water source is to decrease the groundwater mound that has gradually formed under the Fresno-Clovis WWTF recharge ponds. Removing and using some of this water increases the capacity of this area to treat additional wastewater, and mitigates concerns with the shallow groundwater tables in the vicinity. Use of reclaimed wastewater appears to have "win-win" consequences for the City, County and Applicant.

1.5.3 Visual Resources

The landscape surrounding the project site is devoted to agriculture and has an open appearance, but it includes some major industrial and infrastructure facilities, creating a scene that is a mix of the rural and technological. The site itself is flat and open, and contains no features that would be considered to be scenic resources. In most of the views toward the site that were evaluated, the visual quality of the landscapes was moderately low to moderate. Residences in the project viewshed are relatively few, and the closest lie more than 0.5 mile from the site.

The CVEC features would include three HRSGs that are 150 feet long, 60 feet wide, 73 feet high to the top of the casing, and 106 feet high to the top of the highest relief valves and vent silencers. The HRSG stacks would be 145 feet tall and 20 feet in diameter. The 16-cell cooling tower structure would be 769 feet long, 69 feet wide, 45 feet high to the top of the deck and 59 feet high to the top of the fan shrouds. The exhaust stack on the auxiliary boiler will be 120 feet tall and 3.5 feet in diameter. CVEC would have an orderly appearance, would be painted using a neutral color scheme designed to break up its mass and relate it to its backdrop, and would be surrounded by landscaping to provide screening and integration of the plant into its landscape setting.

None of the views toward the site have moderate to high level of visual quality and moderately high to high level of visual sensitivity that CEC staff criteria indicate are required to create the pre-conditions for a significant visual impact to occur. The lighting associated with the project would be limited, and would not pose a hazard or adversely affect day or nighttime views toward the site. The project is in general conformance with all laws, ordinances, regulations, and standards (LORS) related to visual resources in City of San Joaquin plans and zoning ordinance provisions that pertain to this area, with the exception that a height variance from the current 75-foot limit, will be required.

1.5.4 Biology

The project site presently is in agriculture; currently farmed for cotton, as is the land in nearly all directions adjacent to the project site that are not urban. All vestiges of natural habitat, which would have consisted of saltbush and sparse grasslands have been replaced by agricultural uses. Historical agricultural practices in this area were not consistent with maintaining wildlife habitat, and therefore, biological resources are scarce and widely separated. Some habitat similar to the natural condition occurs along Fresno Slough, James Bypass, and on a parcel surrounding Panoche Junction 21 miles west of the project, but otherwise the area lacks significant biological resources. Foraging hawks and waterfowl, highly mobile mammals (coyote), and common farmland birds (European starlings, Brewer's blackbirds) dominate the biota. San Joaquin kit fox historically occurred in the project area, but are quite rare, due to the general paucity of habitat. Giant garter snakes were recorded in parts of James Bypass.

The Applicant consulted with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (USACOE) and National Marine Fisheries Service (NMFS) and determined that with implementation of appropriate mitigation measures during construction, operation and maintenance, the project would cause no significant adverse impact to these species. Section 8.2 provides a detailed analysis of biological resources and the methods proposed to avoid significant impacts to them.

1.5.5 Noise

Ambient noise measurements were collected to determine the L_{90} (the noise level that is exceeded during 90 percent of the measurement period) nighttime noise level at the nearest residence (i.e., sensitive receptor). Noise modeling was used to determine the contribution to the nighttime ambient levels the plant would make during operation. Nighttime noise levels at the nearest residences will be less than 49 decibels, A-rated (dBA), which is within the City of San Joaquin Noise Ordinance requirements. Since the noise level at the nearest receptor will be in accordance with local LORS, no adverse impact is expected from the normal operation of the plant.

1.6 Key Benefits

1.6.1 Environmental

CVEC will employ advanced, high-efficiency combustion turbine technology and selective catalytic reduction (SCR) to minimize emissions from the facility. NO_x emissions will be approximately 90 percent less than those for existing older generating facilities. In addition to the significant reduction of emissions, CVEC's operating efficiency will be such that the plant will consume 40 percent less fuel than existing older plants of similar size. CVEC will also obtain emission offsets to more than compensate for the air emissions. Therefore, the CVEC project will provide a net air quality improvement for the region.

CVEC will also minimize freshwater use. Treated effluent (i.e., reclaimed wastewater) from the Fresno-Clovis WWTF will be used for plant cooling and process water needs. This will allow for the commercial use of a wastewater stream and help control expansion of the groundwater mound near the WWTF.

1.6.2 Employment

The project will provide for a peak of approximately 600 construction jobs, with an average of almost 300 construction jobs, over a 2-year period. In addition, it would provide approximately 30 full-time, living-wage jobs throughout the life of the plant.

1.6.3 Tax Base

CVEC will be a significant tax contributor, supporting the services and programs of the City of San Joaquin and Fresno County. Property taxes paid by CVEC will have a significant beneficial impact to the City of San Joaquin's tax base by more than doubling the City's current General Fund revenues.

1.6.4 Energy Efficiency

CVEC will be an efficient, environmentally responsible source of economic and reliable energy to serve the growing energy demands of the deregulated California Energy Market. CVEC will help ensure reliable, clean, low-cost electricity in the future.

1.7 Persons Who Prepared the AFC

Persons with primary responsibility for the preparation of each section of this AFC are listed in Appendix 1C.

1.8 Laws, Ordinances, Regulations, and Standards (LORS)

Each section addresses the relevant LORS and addresses compliance with them. For convenience, a summary LORS table is provided in Appendix 1D.

1.9 Permitting Requirements

Each Section provides a list of applicable federal, state, and local permits that would be required by each jurisdiction for the project. For convenience, a table summarizing those permits is provided in Appendix 1E, and an agency contact list for each section is provided in Appendix 1F.

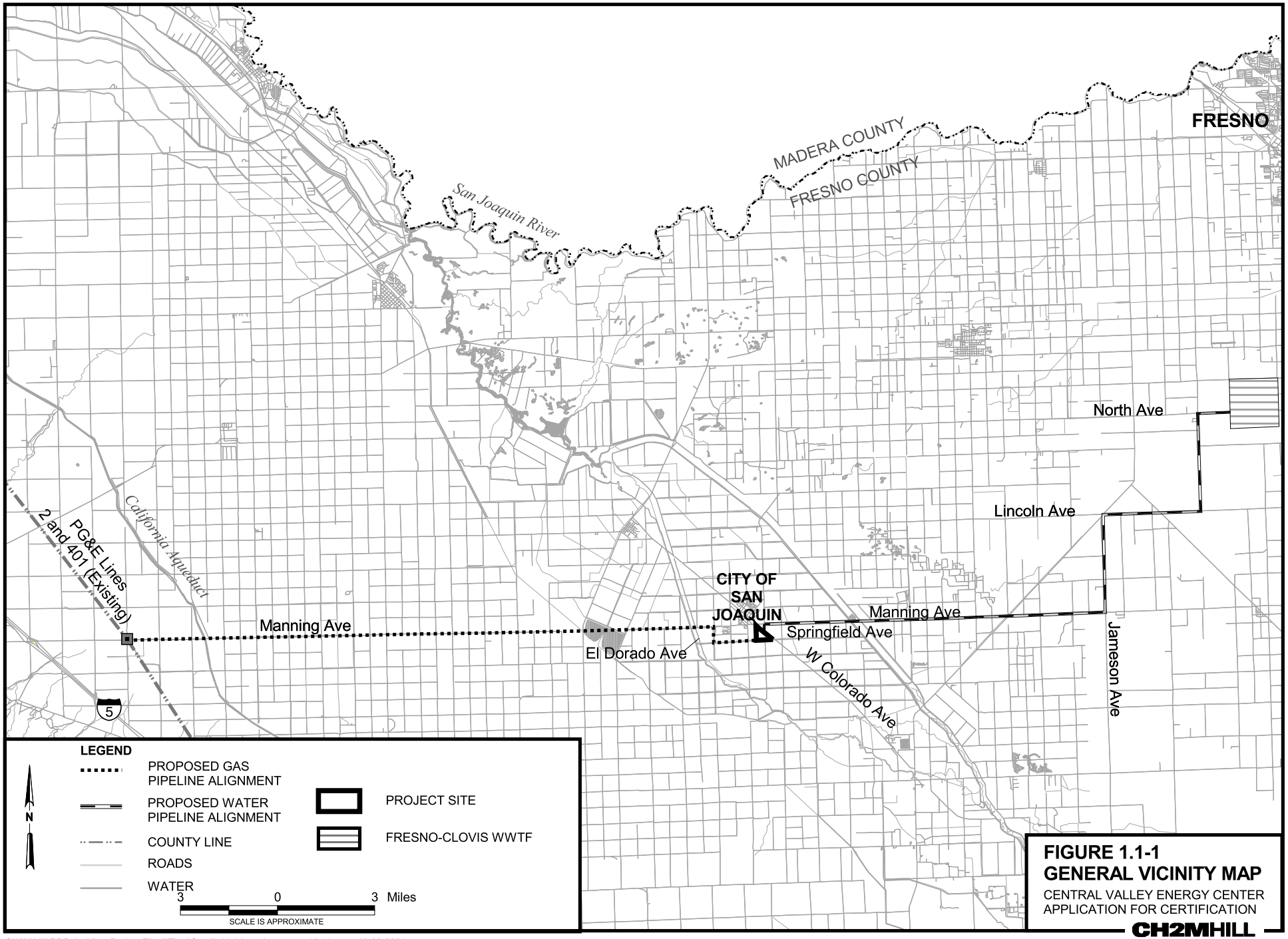

FIGURE 1.1-1
GENERAL VICINITY MAP
CENTRAL VALLEY ENERGY CENTER
APPLICATION FOR CERTIFICATION

CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\cvec\cvec.apr 10:41 p.m. 10-22-2001

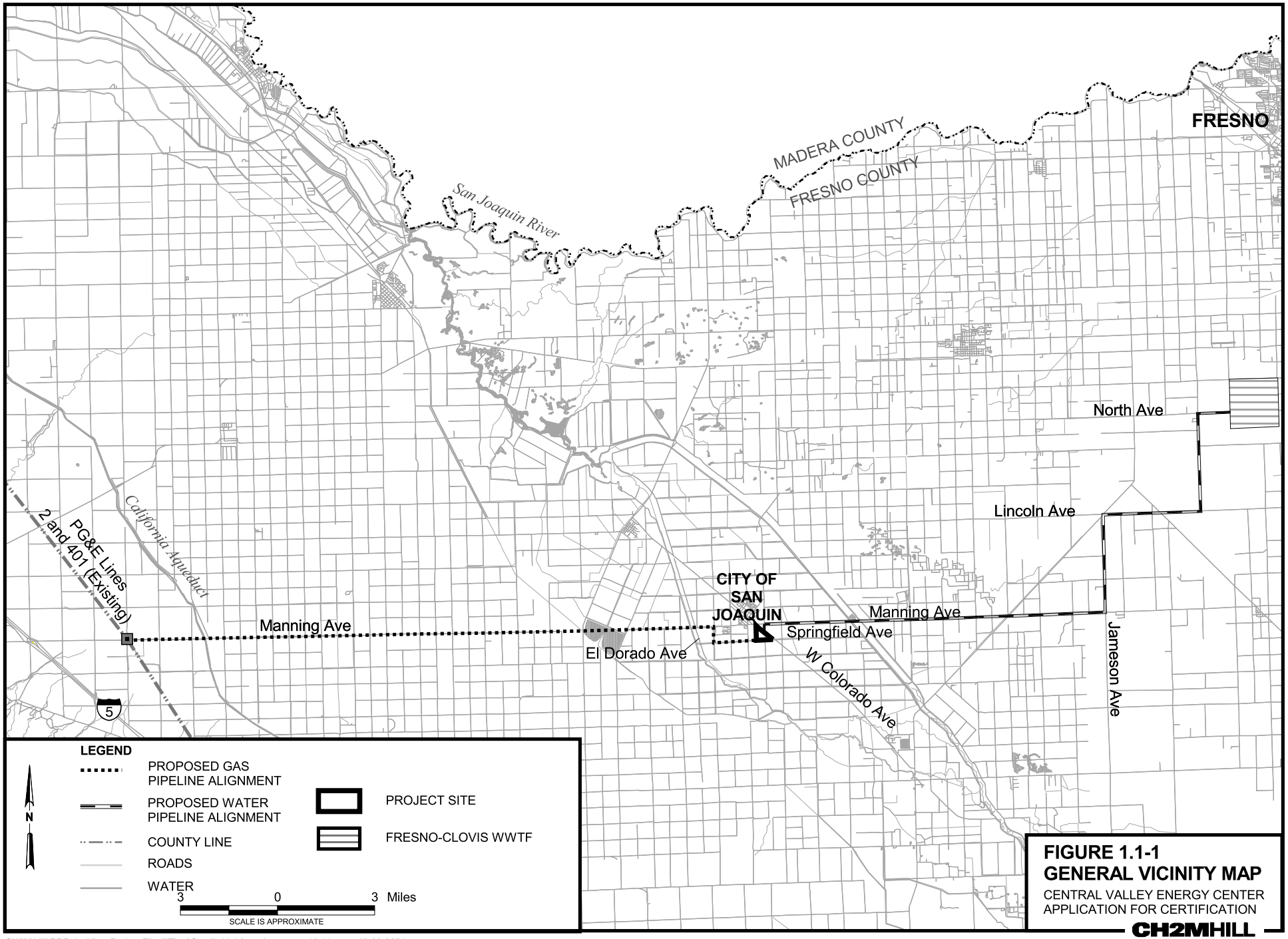

FIGURE 1.1-1
GENERAL VICINITY MAP
CENTRAL VALLEY ENERGY CENTER
APPLICATION FOR CERTIFICATION

CH2MHILL

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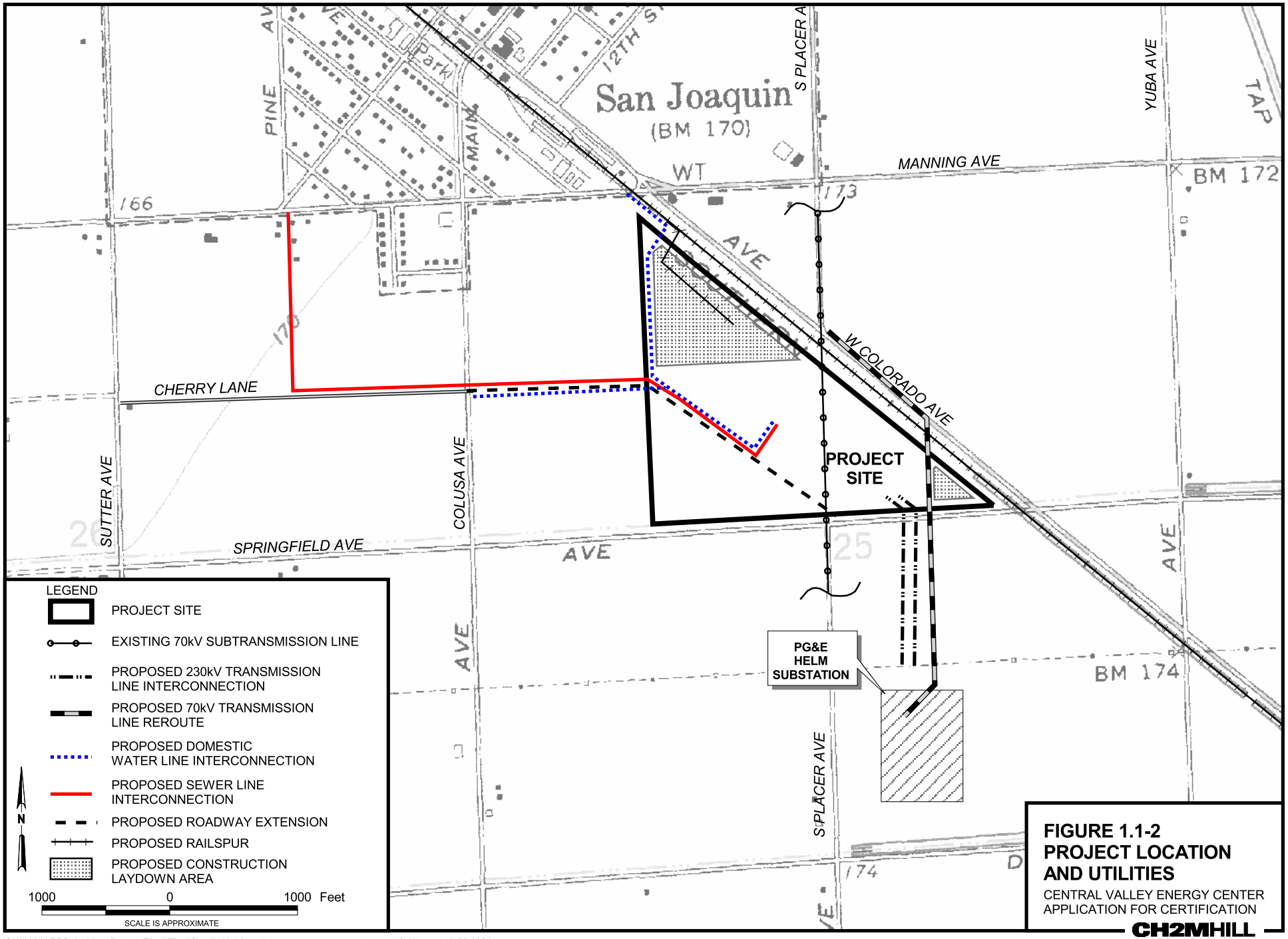
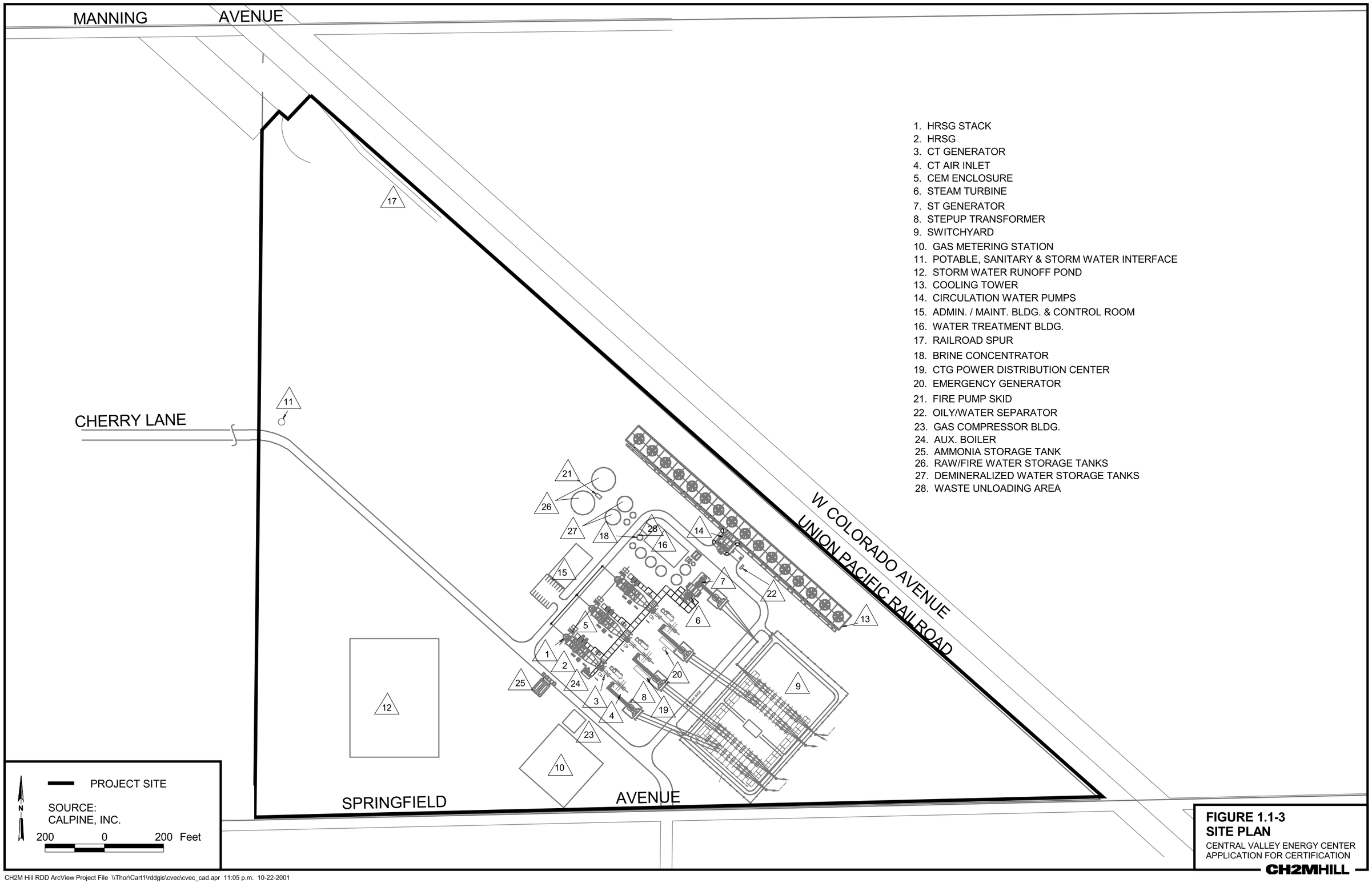


FIGURE 1.1-2
PROJECT LOCATION AND UTILITIES
CENTRAL VALLEY ENERGY CENTER
APPLICATION FOR CERTIFICATION
CH2MHILL

CH2M Hill RDD ArcView Project File \\Thor\Cart1\rddgis\cvec\cvec_gas_water_species.apr 10:57 p.m. 10-22-2001



1. HRSG STACK
2. HRSG
3. CT GENERATOR
4. CT AIR INLET
5. CEM ENCLOSURE
6. STEAM TURBINE
7. ST GENERATOR
8. STEPUP TRANSFORMER
9. SWITCHYARD
10. GAS METERING STATION
11. POTABLE, SANITARY & STORM WATER INTERFACE
12. STORM WATER RUNOFF POND
13. COOLING TOWER
14. CIRCULATION WATER PUMPS
15. ADMIN. / MAINT. BLDG. & CONTROL ROOM
16. WATER TREATMENT BLDG.
17. RAILROAD SPUR
18. BRINE CONCENTRATOR
19. CTG POWER DISTRIBUTION CENTER
20. EMERGENCY GENERATOR
21. FIRE PUMP SKID
22. OILY/WATER SEPARATOR
23. GAS COMPRESSOR BLDG.
24. AUX. BOILER
25. AMMONIA STORAGE TANK
26. RAW/FIRE WATER STORAGE TANKS
27. DEMINERALIZED WATER STORAGE TANKS
28. WASTE UNLOADING AREA

FIGURE 1.1-3
SITE PLAN
CENTRAL VALLEY ENERGY CENTER
APPLICATION FOR CERTIFICATION
CH2MHILL

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FIGURE 1.1-4
PROJECT SITE BEFORE CONSTRUCTION
CENTRAL VALLEY ENERGY CENTER APPLICATION FOR CERTIFICATION
CH2MHILL

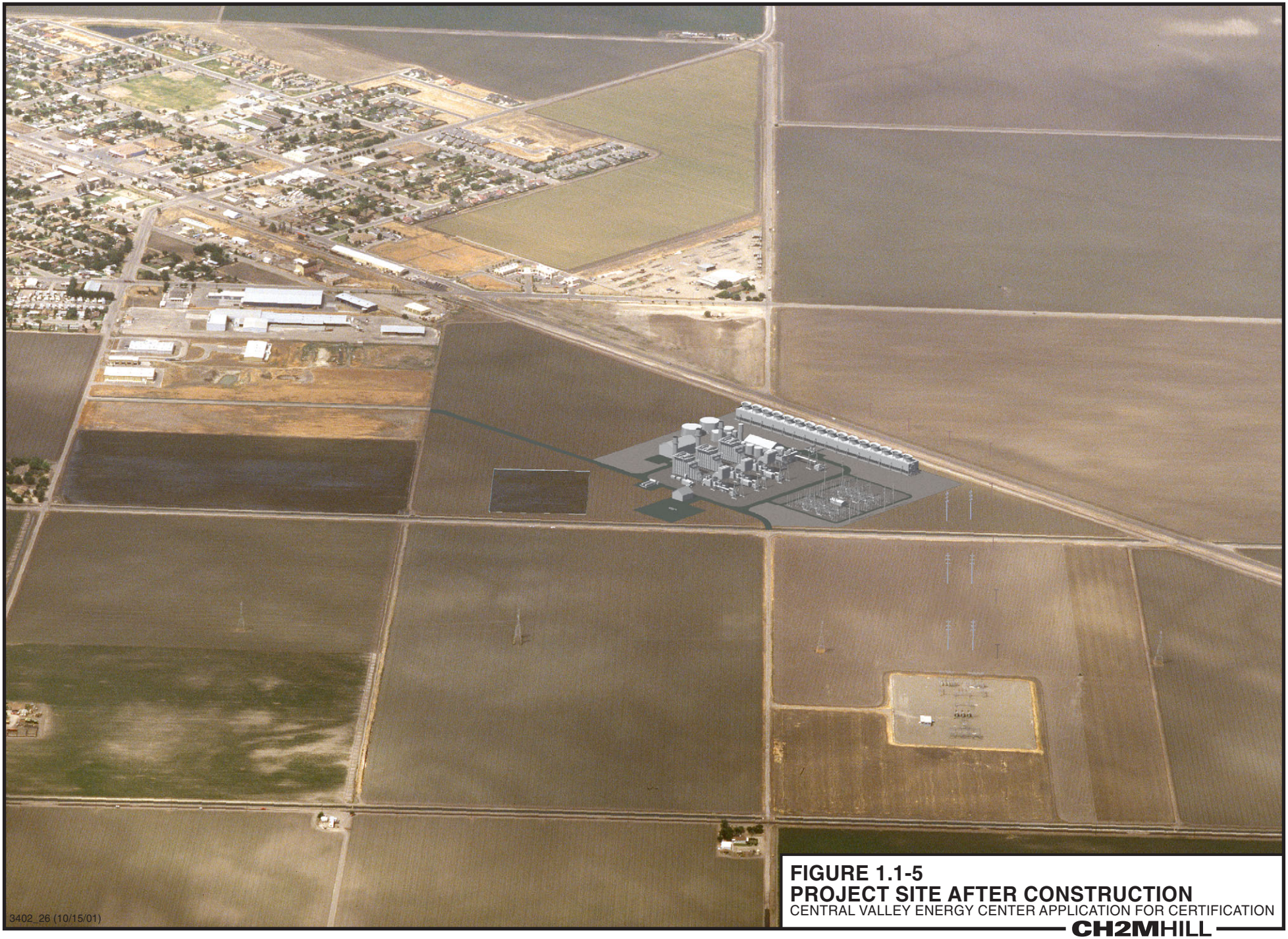

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FIGURE 1.1-5
PROJECT SITE AFTER CONSTRUCTION
CENTRAL VALLEY ENERGY CENTER APPLICATION FOR CERTIFICATION
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